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CANTOR COLBURN, LLP
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EXAMINER

WOLLSCHLAGER, JEFFREY MICHAEL

ART UNIT	PAPER NUMBER
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1791

NOTIFICATION DATE	DELIVERY MODE
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04/06/2010

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/826,887	Applicant(s) CHAKRABORTY ET AL.	
	Examiner JEFFREY WOLLSCHLAGER	Art Unit 1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 March 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 and 32-35 is/are pending in the application.
- 4a) Of the above claim(s) 9, 11, 21, 23 and 27 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8, 10, 12-20, 22, 24-26 and 32-35 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on March 18, 2010 has been entered.

Response to Amendment

Applicant's amendment to the claims filed March 18, 2010 has been entered. Claims 28-31 have been canceled. Claim 35 is new. Claims 9, 11, 21, 23 and 27 remain withdrawn from further consideration. Claims 1-8, 10, 12-20, 22, 24-26 and 32-35 are under examination.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 35 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 35 recites "the article has a diameter to height ratio of greater than or equal to 1.6". The examiner submits that there does not appear to be support for such a limitation in the original disclosure. Referring to examples 1-6 in the original disclosure the examiner submits that the

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disclosed ratio is more appropriately understood to be “about 1.6 – 2.0” and that all values above 1.6 have not been reasonably conveyed as having been in possession of the inventors at the time the application was filed

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 8, 10, 12-20 and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Hanejko et al. (US 6,534,564).

Regarding claims 1, 8, 10, 12-20 and 22, Hanejko et al. teach the claimed process for compressing polyphenylene ether (PPE) comprising introducing a powder comprising unheated to a compression mold and subjecting the powder to a pressure within the claimed range and at a temperature within the claimed range to produce an article having a greater density than the PPE powder and having a compressive strength greater than 25 kg (Abstract; col. 2, lines 53-62; col. 3, lines 5-37; col. 6, lines 8-15; col. 6, lines 27-39; col. 9, lines 38-43; col. 10, lines 48-67; Table 3 and Table 4).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 2, 3, 5-7, 24, 25 and 33-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hanejko et al. (US 6,534,564).

As to claims 2, 3, 5-7, 24, 25 and 33-35, Hanejko et al. teach the method of claim 1 set forth above. Hanejko et al. do not expressly teach the claimed time of compacting the powder or the specific properties of the powder recited. However, it is submitted that one having ordinary skill would have readily determined the required pressing time and would have readily selected routinely available PPE powders when practicing the method of Hanejko et al. for the purpose of effectively achieving the desired green strength. Further, one having ordinary skill would have found it obvious to have made the compact in a variety of sizes to produce a magnetic core suited for its intended application.

It is noted that claim 4, which depends from claim 2, has not been rejected over Hanejko et al. since the densities of the articles produced by Hanejko et al. fall outside of the claimed range.

Claim 32 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hanejko et al. (US 6,534,564) in view of Gijzen (US 6,359,043).

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Regarding claim 32, Hanejko et al. teach the basic claimed process for compressing polyphenylene ether (PPE) comprising introducing a powder comprising unheated to a compression mold and subjecting the powder to a pressure within the claimed range and at a temperature within the claimed range to produce an article having a greater density than the PPE powder and having a compressive strength greater than 25 kg (Abstract; col. 2, lines 53-62; col. 3, lines 5-37; col. 6, lines 8-15; col. 6, lines 27-39; col. 9, lines 38-43; col. 10, lines 48-67; Table 3 and Table 4). Hanejko et al. do not expressly teach employing PPE with the same claimed intrinsic viscosity.

However, Gijzen teaches a method comprising utilizing PPE within the claimed intrinsic viscosity range and that the intrinsic viscosity of PPE is chosen depending on the properties required in the product (col. 2, lines 51-59).

Therefore it would have been *prima facie* obvious to one having ordinary skill in the art at the time of the claimed invention to have modified the method of Hanejko et al. and to have employed a PPE within the claimed intrinsic viscosity range, as suggested by Gijzen, since Gijzen teaches that such PPE's are conventional in the art and that the intrinsic viscosity of PPE to be employed is chosen as a function of the desired physical properties of the product (i.e. intrinsic viscosity is a result effective variable).

Claim 1, 3, 4, 15-20, 22, 24-26, 33 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto et al. (JP 2000-302877).

Note: citations from Yamamoto et al. JP 2000-302877 are provided from the previously provided English translation.

Regarding claims 1, Yamamoto et al. '877 teach a method for manufacturing PPE powder with improved particle size distribution comprising introducing powder that is unheated

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into a compression mold and compression molding the powder at a sufficient pressure to raise the density and at a temperature of 5 – 200 °C. (claim 1; paragraphs [0007, 0008, 0017, 0019, 0022, 0026, 0027]). Yamamoto et al. '877 teach and suggest utilizing pressure, as required, to achieve a density within the recited range of 0.7 - 1.055 g/cc. (paragraphs [0008; 0019]).

Further, Yamamoto et al. suggest that the resulting density of the product correlates with the pressure applied in the compression mold (paragraph [0027] examples 1-4; comparative example 5) thereby suggesting that the pressure applied in the compression mold is a result effective variable for controlling density. While Yamamoto et al. '877 teach the compression provides sufficient strength, Yamamoto et al. do not teach what the strength is of the material. However, it is noted that the density produced by Yamamoto et al. highly overlaps the disclosed density range. It is implicit, and supported by the evidence of record, that the compressive strength of the article correlates with the density.

Therefore it would have been *prima facie* obvious to one having ordinary skill in the art at the time of the claimed invention to have modified the method of Yamamoto et al. and to have readily determined and optimized the required compression pressure for a given value of the compression temperature within the disclosed range of 5-200 °C in order to produce an article having the density required by Yamamoto et al.

As to claim 3, Yamamoto et al. '877 teaches employing temperatures within the claimed range and suggests utilizing pressure, as required as a result effective variable, to achieve a density within the disclosed and claimed range (e.g. claim 4). As such, it follows that the same claimed effects and physical properties would implicitly be achieved by the practice of the method.

As to claim 4, Yamamoto et al. '877 teach a density within the range of 0.7 – 1.055 g/cc.

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As to claims 15-20, Yamamoto et al. '877 teach a range from 5-200 °C is suitable and preferably employ a heated mold during the compression molding (paragraph [0022]). The examiner notes that the sequence of performing the steps is *prima facie* obvious absent a showing of new or unexpected results.

As to claim 22, the compressed powder in tabular form set forth by Yamamoto et al. is understood to be a single phase compact (paragraphs [0026 and 0027]).

As to claim 24, the PPE powder disclosed by Yamamoto et al. has 60% of the particles with a size of less than 100 micrometers.

As to claim 33, Yamamoto et al. '877 exemplify a resin with an intrinsic viscosity of 0.53 dl/gm (paragraph [0026])

As to claims 25 and 34, Yamamoto et al. '877 disclose the particle size distribution of the particles, thereby suggesting an average within the claimed range (paragraph [0026]).

As to claim 26, Yamamoto et al. employ a confined pressure device (e.g. a mold with a piston and hydraulic compression that allows for an increase in pressure in the mold) (paragraph [0023]).

Claims 2, 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto et al. (JP 2000-302877), as applied to claims 1, 3, 4, 15-20, 22, 24-26, 33 and 34, above, and further in view of Modern Plastics Handbook, edited by Charles A. Harper, Knovel release date: November 20, 2002.

As to claims 2, 5 and 6, Yamamoto et al. do not expressly teach applying the pressure for a particular number of seconds. However, Modern Plastics Handbook discloses that the overall cycle times required for compression molding is determined based upon the molding

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material, the thickness/size of the part to be produced and the mold temperature (6.2.3, last full paragraph).

Therefore it would have been *prima facie* obvious to one having ordinary skill in the art at the time of the claimed invention to have combined the teaching of Yamamoto et al. and Modern Plastics Handbook and to have optimized the required compression cycle time, including to times set forth in the claim, in order to achieve a compression molded product having the required density and size.

As to claim 6, Yamamoto et al. employ the same claimed starting material and disclose densities as high as 1.055 g/cc. Further, the combination set forth above suggests the same claimed process steps performed in the same claimed manner. Accordingly, the same claimed effects and physical properties (e.g. compressive strength) would intrinsically be achieved by the practice of the combined method.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto et al. (JP 2000-302877) and Modern Plastics Handbook, edited by Charles A. Harper, Knovel release date: November 20, 2002), as applied to claims 2, 5 and 6 above, and further in view of Weiss et al. (US 5,294,667).

As to claim 7, the combination teaches the method set forth above. Yamamoto et al. do not expressly state the material is processed to remove or reduce gas trapped between the particles. However, Weiss et al. teach that compaction/compression molding of polyphenylene ether removes the air contained in the interstices of the loose powder which in turn reduces the proportion of fines and the risk of dust explosions (col. 2, lines 55-67).

Therefore it would have been *prima facie* obvious to one having ordinary skill in the art at the time of the claimed invention to have combined the teaching of Yamamoto et al. and Weiss

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et al. and to have removed entrained air from the interstices of the loose powder in the method of Yamamoto et al. since Weiss et al. teach that compaction/compression molding intrinsically performs this function and the result is a product that has reduced fines and reduced risk of dust explosions.

Claim 8, 10, and 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto et al. (JP 2000-302877), as applied to claims 1, 3, 4, 15-20, 22, 24-26, 33 and 34 above, and further in view of Gijzen (US 6,359,043).

As to claims 8, 10 and 12-14, the combination teaches the method set forth above. Yamamoto et al. '877 do not teach employing additives and/or binders as claimed. However, Gijzen teach that adding various additives and binders such as polystyrene resin enhance the properties of PPE (col. 1, lines 35-40; col. 3, lines 25-30).

Therefore it would have been *prima facie* obvious to one having ordinary skill in the art at the time of the claimed invention to have modified the method of Yamamoto et al. and to have employed additives and binders, as suggested by Gijzen, for the purpose of enhancing the properties of the product.

Claim 32 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto et al. (JP 2000-302877) in view of Gijzen (US 6,359,043). *Note: citations from Yamamoto et al. JP 2000-302877 are provided from the previously provided English translation*

Regarding claim 32, Yamamoto et al. '877 teach a method for manufacturing PPE powder with improved particle size distribution comprising introducing powder that is unheated into a compression mold and compression molding the powder at a sufficient pressure to raise the density and at a temperature of 5 – 200 °C. (claim 1; paragraphs [0007, 0008, 0017, 0019,

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0022, 0026, 0027])). Yamamoto et al. '877 teach and suggest utilizing pressure, as required, to achieve a density within the recited range of 0.7 - 1.055 g/cc. (paragraphs [0008; 0019]).

Further, Yamamoto et al. suggest that the resulting density of the product correlates with the pressure applied in the compression mold (paragraph [0027] examples 1-4; comparative example 5) thereby suggesting that the pressure applied in the compression mold is a result effective variable for controlling density. Yamamoto et al. '877 do not expressly recite an example wherein the pressure and the temperature are within the claimed range at the same time. While Yamamoto et al. '877 teach the compression provides sufficient strength, Yamamoto et al. do not teach what the strength is of the material. However, it is noted that the density produced by Yamamoto et al. highly overlaps the disclosed density range. It is implicit, and supported by the evidence of record, that the compressive strength of the article correlates with the density.

Therefore it would have been *prima facie* obvious to one having ordinary skill in the art at the time of the claimed invention to have modified the method of Yamamoto et al. and to have readily determined and optimized the required compression pressure for a given value of the compression temperature within the disclosed range of 5-200 °C in order to produce an article having the density required by Yamamoto et al.

Further, while Yamamoto et al. teach a wide range of molecular weights may be employed they do not expressly recite the claimed intrinsic viscosity.

However, Gijzen teaches a method comprising PPE within the claimed intrinsic viscosity range and that the intrinsic viscosity of PPE is chosen depending on the properties required in the product (col. 2, lines 51-59).

Therefore it would have been *prima facie* obvious to one having ordinary skill in the art at the time of the claimed invention to have modified the method of Yamamoto et al. '877 and to

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have employed a PPE within the claimed intrinsic viscosity range, as suggested by Gijzen, since Gijzen teaches that such PPE's are conventional in the art and that the intrinsic viscosity of PPE to be employed is chosen as a function of the desired physical properties of the product (i.e. intrinsic viscosity is a result effective variable).

Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto et al. (JP 2000-302877), as applied to claims 1, 3, 4, 15-20, 22, 24-26, 33 and 34, above, and further in view of Yamamoto et al. (JP 2000-167827).

As to claim 35, Yamamoto et al. '877 suggest the method of claim 1 set forth above, but do not suggest an article having a diameter (i.e. circular/cylindrical section) to height ratio of greater than or equal to 1.6. However, Yamamoto '827 analogously teach a method of compressing PPE powder wherein the outside diameter is 10.0 mm and the height ranges from 5.28-5.55 mm, thereby disclosing a ratio with values greater than 1.6 (paragraph [0023]).

Therefore it would have been *prima facie* obvious to one having ordinary skill in the art at the time of the claimed invention to have modified the method of Yamamoto '877 and to have compressed the powder as suggested by Yamamoto '827 for the purpose of effectively compacting the powdered PPE in an art recognized suitable manner.

Response to Arguments

Applicant's arguments filed March 18, 2010 have been fully considered, but they are not persuasive. The examiner submits that the full and fair teaching of Yamamoto et al. suggests the claimed process and that while Yamamoto et al. may have a "preference" for temperatures of 80-165 °C they clearly disclose a temperature as low as 5 °C as being suitable. Further, the examiner disagrees with the position that "taken more broadly Yamamoto would appear to

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indicate that sufficient pressurization may not be able to be achieved". The examiner submits that Yamamoto et al. certainly had possession of pressures within the claimed range (e.g. paragraph [0037]) and maintains that Yamamoto et al. is concerned with the resulting density of the compressed product after compressing it at any temperature within the disclosed temperature range of 5-200 °C. The examiner maintains that Yamamoto et al. suggest applying whatever pressure is needed for a given temperature within the disclosed range to achieve a density within the disclosed range. The examiner further maintains that Yamamoto et al. do effectively establish the relationship between pressure, density and strength.

The examiner submits and maintains that one having ordinary skill in view of the teaching of Yamamoto et al. would have found it obvious to use, for example, any of the disclosed pressures (i.e. Yamamoto et al. certainly had possession of pressures within the disclosed values) within Yamamoto et al. within the disclosed temperature range of Yamamoto et al. to produce a product having the required density of Yamamoto et al. Further still, the examiner submits and maintains that one having ordinary skill in view of the teaching of Yamamoto et al. would have found it obvious to have readily determined and optimized, through routine experimentation, a required compressing pressure for a given temperature within the disclosed temperature range of Yamamoto et al. to produce a product having the required density.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JEFFREY WOLLSCHLAGER whose telephone number is (571)272-8937. The examiner can normally be reached on Monday - Thursday 6:45 - 4:15, alternating Fridays.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina Johnson can be reached on 571-272-1176. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jeff Wollschlager/
Primary Examiner
Art Unit 1791

April 3, 2010